

AMENDMENTS TO THE SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE

Amend the following paragraphs:

[0006] ~~--Because the elements of the population of sensors and actuating elements are connected to the evaluation unit over a data bus, More more flexible control and also a more variable set of equipment for population of the actuator is possible on account of the elements from amongst the multitude of sensors and actuating elements being connected to the evaluation unit via a data bus.~~ The bus structure of the first data bus between sensors and evaluation unit – that is to say whether that bus structure is a star, ring or line or a combination thereof – ~~between sensors and evaluation unit~~ is matched by a person skilled in the art to the technical requirements and standards, to the properties of the network, its variability and the properties of the surrounding area in which the network is placed (for example electromagnetic waves, temperature protection). It is not absolutely necessary for the transmission medium of the network to be electrical, either. Although it is possible to form the first data bus on a wire basis with electrical signal transmission, for example with shielded cables, an optical bus, for example with glass-fiber cables or else purely optical transmission paths in the visible range or in the infrared range, is equally feasible, for example a data bus which transmits the signals by electromagnetic waves in a cable-free manner.--.

[0011] --Therefore, in this advantageous refinement, not only sensors but also actuating elements which are directly associated with the actuator can be connected to the evaluation unit and thus be controlled by a controller which is connected to the evaluation unit, and corresponding state data about the ~~actuating means~~ actuator can also be checked indirectly by the controller. This is a measure which initially directly concerns the operation and control of such actuating elements in an actuator, but at the same time also increases the operational reliability of the actuator and the actuating element since more information can be transmitted to the controller in a

simple manner, with the information being supplied to the controller only via a small number of communications devices[,] and this, in turn, enables and simplifies the ability to monitor this reliable and successful advantageous communication provides an opportunity to make inspections, or else makes inspections easier.---

[0014] ~~By transmitting the~~ A transmission of operating parameter data which ~~is transmitted~~ to the evaluation unit by from the sensor ([,]) ~~it is possible to can~~ establish which define the format of the data has for each of the signal types of the sensor ([,]) and it can, for example, by prespecifying nominal values and values of related functions, specify a sensor characteristic curve, which characterizes the sensor behavior with respect to the measurement variables variable ([,]) ~~can be prespecified, for example by prespecifying the nominal values and associated functional values. Therefore~~ As a result, the conversion of the sensor value, such as a voltage, into a measurement variable, such as the temperature prevailing in the region of the sensor, ~~can be performed only occurs first~~ in the evaluation unit, ~~to be precise as so that it is~~ a function of the characteristic curve of the sensor. The maximum operating ranges, supply voltage design and similar characteristics of the sensor can also be stored there in this region. A sensor equipped in this way measures, ~~for example, partial~~ component voltage values for the purpose of determining the temperature, for example. The measured analog value ([,]) ~~which is measured in an analogous manner ([,])~~ is converted into a digital value in the sensor, this digital value being transmitted to the evaluation unit via the first data bus. In the evaluation unit, it is converted into the temperature value with reference to the characteristic curve of the sensor which has been transmitted to the evaluation unit by the sensor. The evaluation unit then transmits the value of the temperature in the region of the sensor to the controller, which executes its control method as a function of the temperature value and not the measured voltage value, on demand or in a cyclical manner. The advantage of this procedure can be seen in that, when the sensor is replaced by a sensor with different characteristic data – for example because the characteristic curve has been determined by measurement for the

individual sensors without manufacturer tolerances – it is possible to match the behavior of the system to the changed sensor. If one sensor is replaced by another, the voltage/temperature relationship of the individual sensor is automatically taken into account by transmitting the operating parameter data of the sensor to the evaluation unit, and the voltage signal is correspondingly individually converted into a temperature value. At the same time, the operating parameters of the individual sensors can be interrogated at through the controller. It is therefore possible to use the controller, as well as the evaluation unit, to check and validate whether a sensor of having the suitable measurement range is providing the measurement region is arranged in a measurement position both using the controller and using the evaluation unit.--

[0016] --~~In further~~ Further preferred refinements of the invention ~~provide for the evaluation unit to be~~ is arranged in the housing of the actuator ~~[[:]] in this case, with a plug connection of on~~ the outside of the housing in order to connect the evaluation unit to the controller, which is possible via a second data bus that is preferably arranged outside the actuator according to a further refinement, ~~via a second data bus is preferably possible~~ via only one cable. This procedure allows the infrastructure upstream of the evaluation unit to be led toward the controller via a single cable which is, in particular, a conventional data bus cable. Downstream of the evaluation unit, a bus which is matched to the specific conditions in the region of the actuator can be used. In this case, the infrastructure downstream of the evaluation unit can, for example, comprise a plurality of bus lines which each have particular associated sensors or actuating elements. This firstly limits and reduces the cabling outlay within the actuator, and at the same time the actuator can be controlled by the controller via a standardized interface independently of the configuration downstream of the evaluation unit, with the available functionalities and sensor devices being designed such that they can be interrogated by the controller via the evaluation unit.--.

[0018] --According to one preferred refinement, the evaluation unit transmits data to a controller via a second data bus. This advantageous method makes it possible to conduct communication with the outside via a conventional data bus, specifically the second [[,]] data bus, whereas configuration-dependent communication between the evaluation unit and sensors is conducted via a first data bus. In this case, the second data bus may, in particular, be a ~~conventional~~ an ordinary standardized data bus, whereas the first data bus can be specifically matched to the particular requirements in the region of the actuator. In the case of such a data bus, the individual associated elements, such as the sensors, can be addressed in a particularly simple manner via an address bit with a length of 1 byte, while data is subsequently transmitted. This would make it possible for one evaluation unit to address up to 256 different devices which can be connected to said evaluation unit via the bus. If more devices are to be connected to the evaluation unit, the size of the address field has to be correspondingly increased.--.

[0031] --The control unit ~~evaluates~~ uses the automatic conversion of the data ~~[[,]] such as the transmitted by the sensors into~~ measurement values ~~[[,]] transmitted by the sensors automatically~~ [[,]] just like it ~~checks~~ uses the verification of the identification data and ~~adapts~~ adjustment of the operating parameter data if this data changes. Furthermore, measured variables, for example the voltage in a temperature sensor, are converted in the evaluation unit into the measurement variables, for example the temperature which is to be associated with the voltage value, using characteristic curves or characteristic tables ~~maps~~.--.

[0034] --~~The~~ For each signal type provided by a sensor, the operating parameter data 21 includes ~~information about~~ which sensor transmits said it operating parameter data to the evaluation unit ~~for each signal type of the sensor~~. This may be, for example, information about whether a temperature sensor transmits data continuously or ~~in a manner which switches the~~ when a threshold value is crossed, whether an acceleration sensor measures absolute acceleration values or

relative acceleration ~~accelerations~~, or the unit of measurement in which the values of a distance sensor are given. Furthermore, characteristic data about the version number, the structure, the format and the data values themselves can be stored in according to the signal type. In addition to the format data, characteristic curve data, for example reference values and associated reference variables ~~variable~~, can be stored, so that the characteristic curve of the sensor is determined by means of extrapolation from a plurality of associated pairs of reference values ~~value~~ and reference variables ~~variable~~. ~~The design on the basis of~~ Also, specific operating voltages, operating currents and other limits of the area range of use of the actuating ~~means~~ actuator and or sensor can be stored in according to the signal type and transmitted to the evaluation unit for further processing.--.